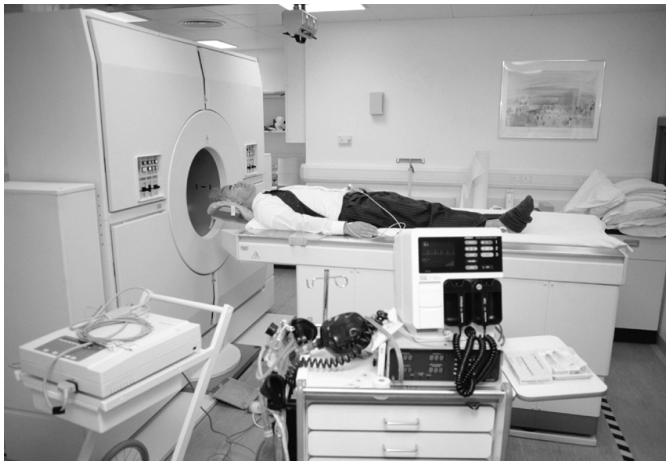
Solving Power Quality and EMC Problems in the Healthcare Industry



The number of power quality and electromagnetic compatibility problems in the healthcare industry is growing at a tremendous rate, along with the sophistication and demands of medical equipment.

Minimizes Compatibility Problems Between Electronic Medical Equipment and the Healthcare Electrical Environment

Virtually all of the electronic medical equipment found in hospitals, clinics, nursing homes, clinical laboratories, surgery suites, and the offices of healthcare professionals are susceptible to electrical and electromagnetic disturbances. Such equipment can range from the simple blood pressure monitor beside a patient's bed to a complex medical imaging system or a heart-lung bypass machine.

Hundreds of reports of equipment malfunctions—including those identified in a recent EPRI survey—confirm several types of incompatibilities between medical equipment and the electrical environment. These include power disturbances, such as voltage sags and surges, and electromagnetic interference from broadcast transmitters, wireless communications devices, and other medical equipment. The consequences of such problems can be profound. Not only are disruptions of surgical procedures, treatments, and diagnoses inconvenient and costly—they can increase the risk and liability of a facility and can be life-threatening to the patient.

By participating in the EPRI project, *Solving Power Quality and Electromagnetic Compatibility (EMC) Problems in the Healthcare Industry*, you can help your customers identify, solve, and prevent the impacts of such problems on medical equipment. You also support a collaborative effort to enhance compatibility between medical equipment and the electrical environment. The project includes the implementation of newly developed test protocols and laboratory testing of medical equipment, while leveraging resources from an EPRI matching fund.

PROJECT SUMMARY In this project, engineers from EPRI PEAC Corporation will use specially developed procedures for testing "single-phase" medical equipment, such as patient monitoring, diagnostic, therapeutic, life-support, and laboratory equipment. They will also test "three-phase" medical equipment, including X-ray, CT scanning, and MRI systems. EPRI PEAC Corp. will then conduct laboratory testing to determine the response of medical equipment to common electrical and electromagnetic disturbances. The results of these tests will allow you and other project participants to understand and overcome the system compatibility problems now confronting the healthcare industry.

EPRI PEAC Corp. will coordinate this collaborative effort between you, your healthcare customers, medical equipment manufacturers, and healthcare-related standards organizations. The project will focus on the compatibility problems you identify, along with those noted by your healthcare customers, EPRI Power Quality Hotline, and EPRI's member Internet service, EPRIweb.

Test findings will be documented in EPRI PEAC Corp. publications, including *Test Briefs*, *Application Notes*, and *Case Studies*. Participating medical equipment manufacturers will receive results from tests of their own products, which they can use to identify solutions for enhancing equipment compatibility. Standards

organizations will also benefit from test results, which can be applied to enhance performance standards and develop compatibility requirements.

In addition, EPRI PEAC Corp. will participate in meetings of standards-related organizations, develop a recommended practice for power quality and EMC in healthcare facilities, and establish the first in a new series of system compatibility test procedures on facility electrical systems.

The project includes three optional services: training workshops in power quality and EMC for you and your customers, information to develop your own training programs and equip your engineers with cost-effective troubleshooting capabilities, and on-site field investigations.

DELIVERABLES

- Enhancement of system compatibility test protocols for electronic medical equipment
- Testing of medical equipment in the EPRI Power Quality Test Facility
- Documentation of generic test results, problem-solving strategies, and real-world problems and solutions in EPRI PEAC Corp. publications
- Creation of guidelines for power quality and EMC in healthcare facilities
- EPRI PEAC Corp. participation in medical equipment-related standards meetings of the Association for the Advancement of Medical Instrumentation, U.S. Food and Drug Administration, and other organizations
- Development of the first in a new series of test protocols for evaluating electrical systems in healthcare facilities

RETURN ON INVESTMENT Armed with the results from compatibility tests of medical equipment, you can strategically position your company to help your healthcare customers make well-informed decisions about the medical equipment they purchase and the electrical requirements of their facilities. You will gain more productive and satisfied customers by providing them with detailed, practical information that they can put to immediate and profitable use. Medical equipment manufacturers will more clearly understand how power quality and EMC problems affect the performance of their products. And, standards organizations will be better informed about the performance of modern medical equipment and the electromagnetic environments of healthcare facilities.

CONTACT INFORMATION For more information, contact the EPRI Customer Assistance Center at 800-313-3774 or *askepri@epri.com*.

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